

## ABSTRACT

A method and apparatus for providing dead reckoning position data, orientation, and heading of a person is disclosed. The apparatus uses an algorithm that automatically determines the appropriate set of navigation functions for personal navigation based upon the orientation of the apparatus. Dead reckoning is accomplished by combining electronic heading and motion signals from human ambulation. Individual orientation and human motion measurement is accomplished with motion sensing devices. In one implementation of the invention, a navigation device provides different heading, position, and/or orientation functionality depending on whether the navigation device is affixed to the user in a vertical position or horizontal position, or the navigation device is not affixed to the user.